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**Specialization
in Cooperative
Feed Manufacturing**



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FCS RESEARCH REPORT 27
FARMER COOPERATIVE SERVICE
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PREFACE

The major purpose of this study was to analyze the feed manufacturing characteristics and efficiency of cooperatives which specialized in producing three main types of primary feeds: poultry, dairy, and livestock. Each of these were classified into one of three categories: where the major type comprised 75 percent or more of the total feed produced; 50 to 74.9 percent of the total; and less than 50 percent of the total. This study covered 1,810 cooperative establishments which manufactured 1,000 tons or more of formula feed in 1969.

More limited analysis also was made of cooperatives on the basis of the importance of feed manufacturing to gross income. One group consisted of those where feed manufacturing was one of the three largest sources of gross income. The other included those where feed manufacturing was the major gross income source. Unexpanded (preliminary) data were available for 1,615 establishments.

Data for this report were obtained from the nationwide study of feed manufacturing by all firms made by the Economic Research Service and Agricultural Stabilization and Conservation Service in 1970. Information on the methodology was included in the overall report on feed manufacturing by farmer cooperatives.* Although data were compiled by States, they are shown regionally in this report because of the small number of cooperative establishments in some States. To avoid disclosure of individual operations, data are not shown for less than three establishments in any State.

The data in this report are currently useful and applicable because the position of cooperatives in the total industry has not changed significantly since 1969; and because the report presents detailed benchmarks which have permanent value for both present and future use.

*Mather, J. Warren, and John M. Bailey. "Cooperatives' Position in Feed Manufacturing." U.S. Dept. Agr. Farmer Cooperative Service, FCS Res. Rpt. No. 25. 1973.

DEFINITION OF TERMS

The following definitions and descriptions are used in this report:

1. A *feed-milling establishment* usually consists of a stationary mill operating at a single location, together with any mobile mills based at that location. It may also consist of one or more mobile mills not associated with any stationary mill, but based at one location. An establishment is not necessarily the same as a business firm, which may include a number of establishments.

Number of establishments with specified operations refers to those which operated mills the full year of 1969 and which produced 1,000 tons or more of formula feed that year. In addition to commercial mills, those operated by individual farmers for their own use and by custom feedlot operators were included.

2. *Formula feeds* contain two or more ingredients that are processed or mixed according to specifications. Total volume of formula feeds in this survey consisted of primary plus secondary manufactured feeds, and feed produced from customer-owned grains that were ground or processed and mixed with other ingredients.

3. *Primary feed manufacturing* is processing and mixing individual feed ingredients, sometimes with the addition of a premix at a rate of less than 100 pounds per ton of finished feed. Examples of specific feed ingredients are feed grains, mill by-products, oilseed meals, and animal proteins.

4. *Secondary feed manufacturing* is processing and mixing one or more ingredients with formula feed supplements. Supplements are usually used at the rate of 300 pounds or more per ton of finished feed, depending on protein content of the supplement and percentage of protein desired in the finished feed.

5. *Feeding own animals* includes formula feed produced for feeding livestock or poultry owned by the feed mill owner. It also includes feed fed to a feed manufacturer's livestock or poultry under contract arrangements on farms of contracting growers.

6. *Custom feeding* is the business of feeding livestock belonging to others, usually in a large-scale feedlot. The owner of the livestock pays for the feed, plus a fee for caring for the animals.

7. *Custom grinding and mixing* is grinding customer-owned feed ingredients and usually includes mixing supplements with them. This is mainly a custom service provided to farmers feeding their own animals. However, toll milling (milling performed for other feed manufacturers) was included in this category.

8. *Regions*—data were tabulated by State and grouped into 10 farm production regions (fig. 1,) p. viii.

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HIGHLIGHTS

This study indicates extent of specialization among 1,810 cooperatives that produced 20.8 million tons of formula feed in 1969.

Poultry Feed Specialization

Thirty-nine cooperative establishments each produced 75 percent or more primary poultry feeds in 1969 (the high group), and their total output of all formula feed was 2.2 million tons—an average of 55,431 tons per establishment. This output was 11 percent of the total production of all cooperatives. About 37 percent was in the Southeast. Another 39 cooperatives with 50-to-74.9-percent poultry feed (the medium group) produced 1.7 million tons of formula feeds, or 43,442 tons per establishment. Largest output was in the Northeast.

Cooperatives with the highest share of poultry feed used 59.7 percent feed grains in their formula feeds, compared with 49 percent by the group with 50-to-74.9-percent poultry feed, and 42 percent by the group with the lowest percentage of poultry feed. Grain by-products comprised 5.2 percent in the highest poultry feed groups compared with 17-18 percent in the other two groups.

Establishments specializing in poultry feed were the most efficient in utilizing milling capacity, employees, and ingredients. Those with 75 percent or more poultry feed operated their mills at 103 percent of capacity, had outputs of 4,669 tons per production worker and 2,437 tons per mill employee, and had 1.45 percent shrink in ingredients. Such data for those with 50-to-74.9-percent poultry feed were 91 percent, 2,635 and 1,914 tons, and 1.56 percent, respectively.

Dairy Feed Specialization

One hundred thirteen cooperative establishments with 75 percent or more primary dairy feed produced 1.2 million tons of all formula feed in 1969, an average of 10,423 tons per establishment. More than two-thirds was in the Northeast. A total of 83 cooperatives with 50-to-74.9-percent dairy feed produced 1.5 million tons (18,242 tons per establishment) with volume largest in the Northeast and Corn Belt.

The two groups of cooperatives with largest shares of dairy feed used about 40 percent corn and other feed grains in their total output while all others used 47 percent of such ingredients. The highest dairy feed group also used a smaller percentage of oilseed meal but a much higher percentage of grain by-products.

The highest dairy feed group operated their mills at 78 percent of capacity, compared with 99 percent for the group with the next highest percentage of dairy feed, and 65 percent for all remaining cooperatives. The highest dairy feed group's production of 2,074 tons per production worker and 1,489 tons per mill employee was about the same as that for mills producing less than half dairy feed, but the output of the 50-to-74.9-percent dairy feed group was somewhat lower. The two groups with the highest proportion of dairy feeds had higher shrinkages in ingredients—3.2 and 1.95 percent, compared with 1.5 percent for all other mills.

Livestock Feed Specialization

There were 350 establishments which produced 75 percent or more livestock feed. Their output was 3.5 million tons—an average of 10,154 tons per establishment, and was 17 percent of the cooperatives' total. About three-fourths were in the Corn Belt and Northern Plains. A total of 272 establishments with 50-to-74.9-percent livestock feed produced 3 million tons of all feeds.

Cooperatives specializing in livestock feeds used about the same percentage of feed grains as others, but more oilseed meals and miscellaneous ingredients, and a smaller percentage of grain by-products and animal proteins.

Cooperatives specializing in livestock feeds operated their mills at a lower percent of capacity—for example, only 62 percent by the group with the highest proportion of livestock feed. Also, they had

less output per employee—1,860 tons per production worker and 1,585 tons per mill employee in the highest livestock feed group and 1,431 and 1,197 tons, respectively, for the 50-to-74.9-percent and the under-50-percent livestock feed groups. Ingredient shrinkage was 2.1, 1.3, and 1 percent for the three respective groups.

Appendix table 1 summarizes these three specialized types of feed operations.

Feed Manufacture as an Important Source of Income

Based on preliminary unexpanded data, 407 cooperative establishments reported feed manufacturing as their major gross income source. Their output was 9.3 million tons, or about half of the total by all reporting cooperatives. Almost half were in the Northeast and Corn Belt. About 59 percent of the group produced 1,000 to 9,999 tons of formula feed, and their total output was only 11 percent of the total. Over 4 percent produced more than 100,000 tons, and their output comprised 37 percent of the total.

A total of 863 cooperatives reported feed manufacturing as one of the three largest sources of gross income, and their output was 13.1 million tons, or 71 percent of the total by all cooperatives. The largest volume was in the Corn Belt and Northeast. Seventy-two percent had outputs of 1,000 to 9,999 tons and comprised 19 percent of the volume, while 2.5 percent each produced more than 100,000 tons and accounted for 32 percent of the total.

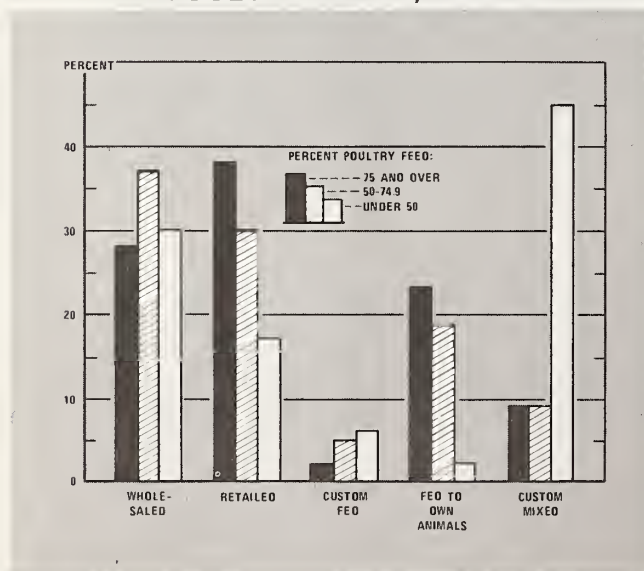


FIGURE 1
FARM PRODUCTION REGIONS

FIGURE 2
PRODUCTION OF PRIMARY FORMULA FEED BY
COOPERATIVES SPECIALIZING IN POULTRY, DAIRY
AND LIVESTOCK FEEDS, 1969



FIGURE 3
DISPOSITION OF ALL FORMULA FEED
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY
POULTRY FEEDS, 1969



*ALSO INCLUDES ALL REMAINING TYPES OF COOPERATIVES

Specialization in Cooperative Feed Manufacturing

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As farms have become larger, more commercialized, and more specialized, feed manufacturing has decentralized in recent years. An increasing number of local and regional mills have been built to serve poultrymen, dairymen, or livestock feeders with deliveries largely made in bulk directly to the farm. There is interest in the extent this trend has developed among cooperatives and how this has affected operating efficiency. This report presents information on this subject from the latest available data.

EXTENT OF SPECIALIZATION

Five hundred two of the 1,810 cooperative establishments reported manufacturing 75 percent or more of one type of primary feed in 1969 (table 2).¹ Thirty-nine specialized in poultry, 113 in dairy, and 350 in livestock feeds. Their total output was 6.9 million tons of all formula feeds in 1969, or 33 percent of total cooperative output—20.8 million tons. About 5.5 million tons were primary feeds, of which 5 million, or about 91 percent, were of the three major types—poultry, dairy, and livestock.

A total of 394 establishments reported manufacturing 50 to 74.9 percent of either poultry, dairy, or livestock primary feeds (table 2). Thirty-nine specialized in poultry, 83 in dairy, and 272 in livestock feeds. This group produced 6.2 million tons of formula feeds, or 30 percent of all cooperative production. About 5.4 million tons were primary feed, of which 3.4 million tons, or 64 percent, were of the three major categories of feed.

A total of 896 cooperative establishments thus reported that more than half of their output consisted of one type of primary feed. Seventy-eight specialized in poultry, 196 in dairy, and 622 in livestock feeds. Their total output was 13.1 million tons, or 63 percent of all cooperative production.

The succeeding sections of this report discuss the manufacturing operations of the three major types of feed. Groups producing 75 percent or more of one type

of feed, groups producing 50-to-75 percent of one type of feed, and groups producing less than 50 percent of one type of feed are referred to as the high, medium, and low groups.

POULTRY FEED SPECIALIZATION

In this and succeeding sections, information is first presented on the production of formula feeds, followed by a discussion of ingredients used in them.

Total Production

Thirty-nine cooperative establishments comprised the high group in primary poultry feed production in 1969, with a total output of about 2.2 million tons of all formula feeds, or an average of 55,431 tons per establishment (tables 2 and 3 and fig. 2). This output was about 11 percent of the total feed produced by all cooperatives. About 37 percent of the output of this group was in the Southeast (table 3). The Northeast, with 21 percent, was next. Leading States were Georgia with 414,402 tons of all feeds, followed by Alabama, California, Wisconsin, and Mississippi.

Another 39 cooperatives averaged 50-to-74.9-percent poultry feed, and their total output was 1.7 million tons, or 8 percent of total cooperative output. This was an average of 43,442 tons per establishment. The largest volumes were in the Northeast and Appalachia areas. The leading States were North Carolina with 331,284 tons, followed by Pennsylvania, Washington, Georgia, and Vermont.

The 1,732 low cooperatives, producing less than 50 percent poultry feed, produced 16.9 million tons of feed—an average of 9,761 tons per establishment.

Primary Production by Kind, Use, and Disposition

The high poultry feed group produced 1.9 million tons of primary feed, which was about 90 percent of their total output. Ninety-two percent of this volume was poultry feeds (table 2 and fig. 2). Average outputs were 49,856 tons of all primary feeds and 45,953 tons of poultry feeds.

¹ Tables are in the appendix.

The medium group produced a little more than 1.6 million tons of primary feed (96 percent of their total output), of which 62 percent was primary poultry feed. Average outputs were 41,644 and 25,831 tons of total and poultry feed, respectively.

About 58 percent of the low poultry feed associations' production was primary feed, of which only 16 percent was poultry feed. Average output of all feed was 9,368 tons, but data on poultry feeds were not compiled for this group.

Almost all the primary feed in both the high and medium poultry groups consisted of complete feeds.

In the high poultry feed group, egg feed constituted 49 percent; broiler feed, 37 percent; turkey feed, 6 percent; and all other types, 8 percent of the total (table 4). In the medium poultry feed group, egg feed was 30 percent; broiler feed, 27 percent; turkey feed, 5 percent; and all other types, 38 percent. In the low poultry feed group, egg feed represented 11 percent; broiler and turkey feed each about 2 percent; and all other feeds, 84 percent of total primary output.

About two-thirds of the feed in both high and medium poultry feed groups was sold at wholesale or retail, and about a fifth was fed to their own animals (fig. 3 and table 5). The medium group had a little more custom feeding, but both had the same percentage of custom mixing. The remaining cooperatives sold 46 percent at wholesale; 45 percent, custom mixed; 6 percent, custom fed; and only 2 percent, fed to their own animals.

Outshipments of All Feed

Ninety-two percent of the feed in the high poultry group was shipped out in bulk, compared with 80 percent in the medium poultry feed group and 71 percent in the low group.

About 97 percent of all feed in the high poultry group moved out in trucks, compared with 82 percent in the medium group and 88 percent in the low group. Average distances feeds were transported were about the same for all groups—31 to 39 miles.

Ingredients Used in Primary Feeds

The high group used ingredients consisting of 59.7 percent feed grains compared with 49 percent by the medium group and 42 percent by the low group (fig. 4 and table 6).

Use of oilseed meals was in the same proportion by all groups, but use of grain by-products in the high poultry group made up only 5.2 percent, compared with 17 to 18 percent in the other two groups. Use of animal proteins was in an opposite relationship—7.1, 5.7, and 3.8 percent in the three groups.

Miscellaneous ingredients constituted slightly over 11 percent of total ingredients in the high and medium groups, compared with 18.2 percent in the low group.

Inshipments of Ingredients

The high poultry feed group brought in 61 percent of its ingredients for primary feeds by rail, 32 percent by truck, and 7 percent by barge. The medium group moved 77 percent by rail and 23 percent by truck. The low group used just the opposite modes—63 percent by truck and 37 percent by rail.

The principal suppliers of ingredients of the high and medium poultry feed groups were located at much greater distances than were suppliers of the remaining cooperatives. For example, the principal suppliers of corn in the high group were located an average of 582 miles from the mills, compared with 338 miles for the low group (fig. 5 and table 6).

Mill Capacity

The high poultry feed group (39 co-op establishments) reported an average milling capacity of 53,631 tons, based on 48 weeks of operation (table 7). The medium poultry feed group (39 co-ops) had a capacity of 45,572 tons per establishment, and the remaining cooperatives—with under 50 percent poultry feed—reported a total milling capacity of 16,563 tons per establishment.

Employees

The 39 high poultry feed establishments averaged 23 mill employees and 12 production employees compared with 23 and 17 employees, respectively, for the medium group. The low group had an average of 7.1 mill employees and 5.4 production employees.

Operating Efficiency

The nationwide study of feed manufacturing did not include any data on operating cost or other financial information. Hence, data on operating efficiency are limited to the percentage of milling capacity utilized, output per mill employee and per production employee, and inventory shrinkage.

Percent of Capacity Utilized

The 39 high group cooperative establishments operated their mills at 103 percent of capacity, while the 39 medium establishments operated at 91 percent of capacity in 1969 (fig. 6 and table 7). The low group operated at only 59 percent of capacity that year.

Output per Employee

Cooperative establishments producing 75 percent or more poultry feed had a much higher output per employee than those with lesser proportions of poultry feed. Their output was 4,669 tons per production worker and

FIGURE 4
PERCENTAGE OF INGREDIENTS USED
IN PRIMARY FORMULA FEEDS
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY POULTRY
FEEDS, 1969

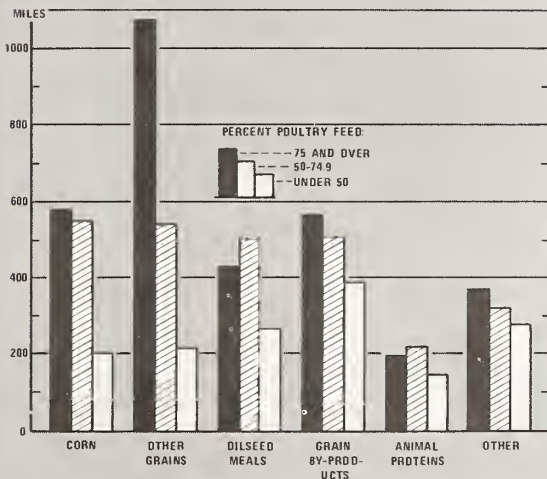
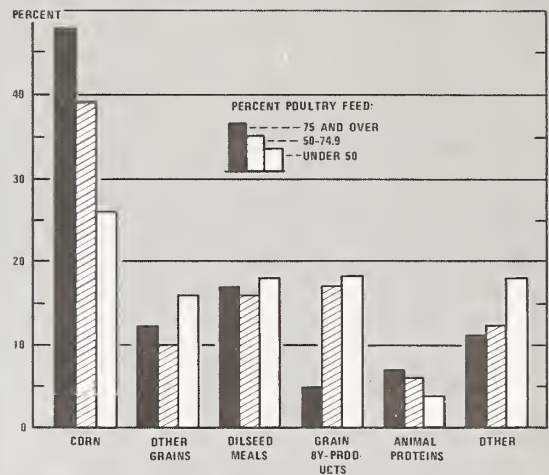
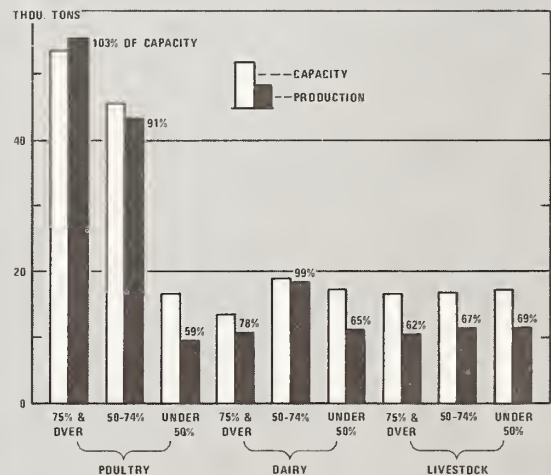


FIGURE 5
AVERAGE DISTANCE OF PRINCIPAL
SUPPLIERS OF INGREDIENTS FROM
COOPERATIVE MILLS SPECIALIZING IN
PRIMARY POULTRY FEEDS, 1969

FIGURE 6
AVERAGE CAPACITY AND PRODUCTION
OF FORMULA FEED PER MILL
SPECIALIZING IN POULTRY, DAIRY
AND LIVESTOCK FEEDS, 1969



2,437 tons per mill employee in 1969, compared with 2,635 and 1,914 tons, respectively, for mills producing 50-to-74.9-percent poultry feed, and 1,793 and 1,383 tons, respectively, for all other milling establishments (figs. 7 and 8 and table 8).

Ingredient Inventory Shrink

High-group cooperatives had lower shrinkage of ingredients—1.45 percent for the high poultry feed group and 1.56 percent for the medium volume group (fig. 9 and table 9). Shrinkage at all other mills averaged about 2.2 percent. This may have been due in part to the smaller number of ingredients used and type of grinding used in the manufacture of poultry feeds.

DAIRY FEED SPECIALIZATION

Total Production

Of their total production, 113 cooperative establishments reported that 75 percent or more was primary dairy feed in 1969. Their total output was almost 1.2 million tons, or an average of 10,423 tons per establishment (tables 2 and 10). This output was 5.7 percent of all types of feed produced by all cooperatives. Over two-thirds was in the Northeast and Pacific Regions of the United States (table 10). Leading States in this group were New York with 303,926 tons, California with 255,222 tons, and Wisconsin with 113,215 tons.

Production of 83 cooperatives consisted of 50-to-74.9-percent dairy feeds. Their total output was 1.5 million tons, or 7.3 percent of all cooperative output. The average output was 18,242 tons per establishment. Volume was largest in the Northeast and Corn Belt. Leading States were New York with 482,468 tons, Missouri with 303,550 tons, and Tennessee with 196,303 tons.

The remaining cooperatives (those with outputs of less than 50-percent dairy feed) produced 18.1 million tons of feed, or an average of 11,195 tons per establishment.

Primary Production By Kind, Use, and Disposition

The high dairy volume group produced 1.9 million tons of primary feed, which was 87 percent of their total. Ninety-three percent of this output was dairy feed (fig. 2 and table 11). Average output per establishment was 9,760 tons of all primary feeds and 8,472 tons of dairy feeds.

The medium group produced about 1.4 million tons (91 percent of their total), of which 65 percent was primary dairy feed. Average output was 16,545 tons, of which 10,822 were dairy feeds.

For the low group, 60 percent was primary feed and only 18 percent of this output was dairy feed. Average of all primary and primary dairy feed outputs were 11,841 and 2,505 tons, respectively.

About 95 percent of the primary feeds in the high and medium dairy groups were complete feeds, compared with 80 percent in the low dairy group.

The high group, producing more than 75 percent dairy feed, sold about 64 percent of its output at wholesale or retail and custom mixed about 30 percent (fig. 10 and table 12). The medium dairy feed group moved 83 percent at wholesale or retail and custom mixed 14 percent. Both groups reported very little volume as custom fed or fed to own animals.

The remaining cooperatives reported a much larger share of their volume (41 percent) as custom mixed.

Outshipments of All Feed

Eighty-two percent of the output of the high dairy feed group was moved out in bulk, compared with 70 percent in the medium dairy group and 74 percent in the lowest dairy feed group.

About 96 percent of all feed in the high dairy feed group was transported in trucks—mostly company owned. The percentage in trucks was 67 percent for the medium dairy feed group and 90 percent for the low group.

Average distances feeds were transported ranged from 28 to 38 miles for all groups.

Ingredients Used in Primary Feeds

Cooperative establishments with 75 percent or more of production in dairy feed used 22.3 percent corn and 18.3 percent other grains (fig. 11 and table 13). Those producing 50-to-74.9-percent dairy feed used 26.3 percent corn and 13.5 percent other grains. All other establishments used 32.3 percent corn and 14.4 percent other grains.

The high dairy feed cooperatives used about the same percentage of oilseed meals, fewer grain by-products, slightly more animal proteins, and considerably more miscellaneous ingredients than the medium group. Both groups used a smaller percentage of oilseed meals and grain by-products than those with volumes of less than 50 percent dairy feed.

Inshipments of Ingredients

The high dairy feed group brought in about 43 percent of their ingredients by truck and 57 percent by rail. The medium dairy feed group reported that 34 percent came in by truck and 65 percent by rail. About the opposite situation existed among all other cooperatives, where 59 percent was by rail and 1 percent was by barge.

The principal suppliers of feed grains were an average of 291 miles from the high dairy feed cooperatives and

367 miles from the medium dairy feed cooperatives, compared with 340 miles for the remaining associations (fig. 12 and table 13).

Main suppliers for other types of ingredients generally were located somewhat farther from the two groups of cooperatives with highest dairy feed production than from those with a small proportion of dairy feed. The average distance from main suppliers for all ingredients was 366 miles for the high dairy feed group, 386 for the medium dairy feed group, and 318 miles for the low group.

Mill Capacity

Cooperatives with the largest percentage of poultry feed volumes reported an average capacity of 13,333 tons per establishment, based on 48 weeks a year (table 7). The medium poultry feed group had an average capacity of 18,507 tons, compared with 17,185 tons for the low group.

Employees

The high group averaged five production employees and seven mill employees per establishment. The medium dairy feed group had about twice as many of each type. The low group employed the same number as the high group.

Operating Efficiency

Percent of Capacity Utilized

High-group cooperatives operated their mills at only 78 percent of rated capacity, compared with 99 percent for the medium group (those with 50-to-74.9 percent dairy feed) (fig. 6 and table 7). The remaining associations' output equaled only 65 percent of their capacity.

Output per Employee

The high dairy feed cooperatives' output per production employee of 2,074 tons and per mill employee of 1,489 tons was about the same as that for groups producing less than 50 percent dairy feed (figs. 7 and 8 and table 8). Medium-group cooperatives had somewhat lower outputs per person.

Ingredient Inventory Shrink

Cooperatives with the highest proportion of dairy feeds reported the highest shrinkage of ingredient inventories (fig. 9 and table 9). For example, a higher percentage of molasses is used in dairy feeds and some residue is left in trucks and machinery that is not recoverable. Shrinkage averaged 3.2 percent for the high dairy feed group, 1.95 for the medium group, and about 1.5 percent for the low group.

LIVESTOCK FEED SPECIALIZATION

Total Production

There were 350 cooperative establishments whose feed production included 75 percent or more of livestock feed in 1969. Their production of all feeds totaled more than 3.5 million tons, or an average of 10,154 tons per establishment (tables 2 and 14). This output was 17 percent of all feed produced by all cooperatives that year. About three-fourths was in the Corn Belt and Northern Plains Regions (table 14). Leading States were Iowa, with 956,152 tons; Kansas with 556,842 tons; and Nebraska with 484,514 tons.

The output of the medium group of 272 establishments was 3 million tons—an average of 11,101 tons per establishment. Two-thirds of this volume was in the Corn Belt. The leading States were Missouri, with 706,610 tons; Iowa, with 434,047; and Ohio, with 324,337.

The low group produced 14.2 million tons of feed, or an average of 10,568 tons per establishment.

Primary Production By Kind, Use, and Disposition

The high livestock feed group produced 2.5 million tons of primary formula feed, which was 72 percent of their total output. About 89 percent of this was livestock feed (fig. 2 and table 14). Average output was 7,282 tons of all primary feeds and 6,444 tons of primary livestock feeds.

The medium group produced about 2.4 million tons of primary feed (78 percent of their total); 64 percent of this was primary livestock feed. Average outputs were 8,670 tons of all primary and 5,583 tons of livestock.

For the remaining group, 59 percent was primary feed, and only 17 percent of this was livestock feed. Its average production of all primary feeds was 16,991 tons.

About 67 percent of the primary feed in the high livestock feed group and 76 percent in the medium group were complete feeds, compared with 89 percent for the remainder that handled very little livestock feed.

The cooperatives with the largest proportion of livestock feed produced 43 percent primary formula beef and sheep feed, 38 percent swine feed, and 8 percent other livestock feeds (table 15).

The next group—with 50-to-74.9-percent livestock feed—produced the following types: 26 percent, beef and sheep; 33 percent, swine; and 5 percent, other livestock types. Dairy feed was the main remaining type—accounting for 22 percent of the total.

The high livestock feed group sold about one-third at wholesale and custom mixed one-third (fig. 13 and table 16). About a fifth was sold at retail, 10 percent was custom fed, and 3 percent was fed to their own animals.



FIGURE 7
OUTPUT OF FORMULA FEED PER
PRODUCTION WORKER IN CO-OPS
SPECIALIZING IN POULTRY, DAIRY
AND LIVESTOCK FEEDS, 1969

FIGURE 8
OUTPUT OF FORMULA FEED PER MILL
EMPLOYEE IN CO-OPS SPECIALIZING IN
POULTRY, DAIRY AND LIVESTOCK
FEEDS, 1969

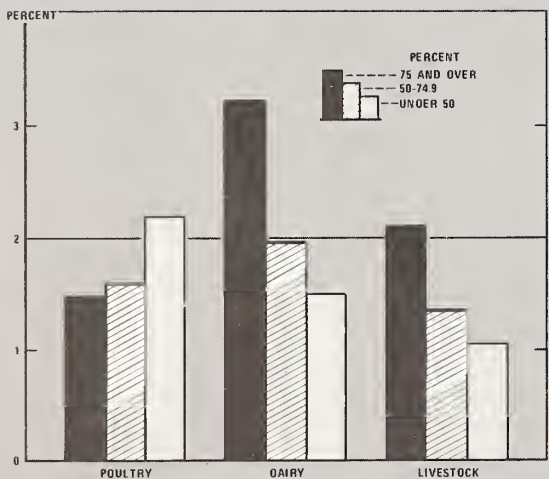
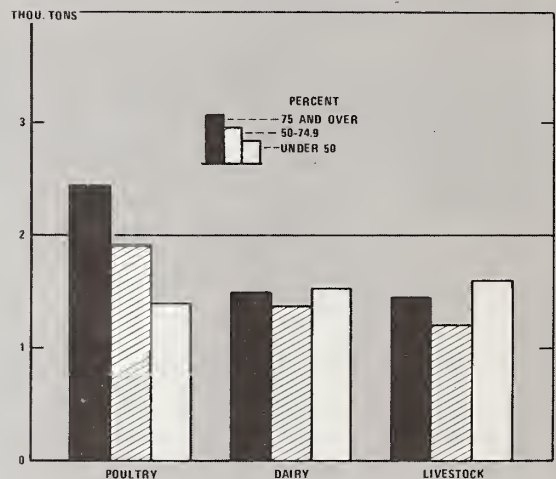


FIGURE 9
PERCENTAGE SHRINK IN INGREDIENTS
USED IN FORMULA FEEDS
MANUFACTURED BY CO-OPS
SPECIALIZING IN POULTRY, DAIRY,
AND LIVESTOCK FEEDS, 1969

FIGURE 10
DISPOSITION OF ALL FORMULA FEED
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY DAIRY
FEEDS, 1969

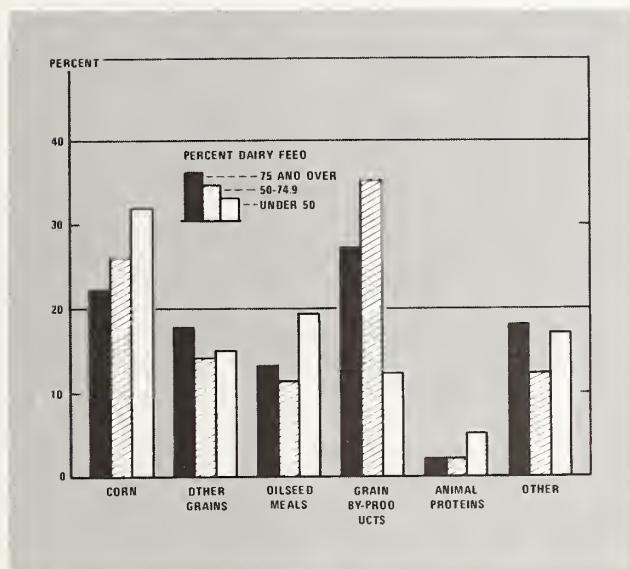
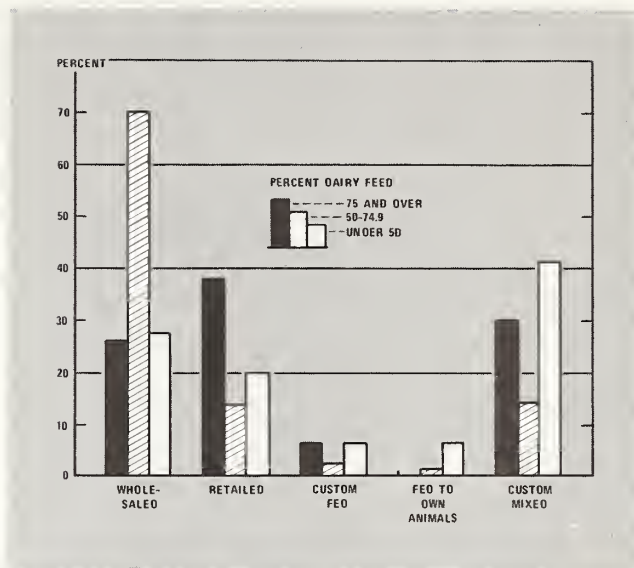
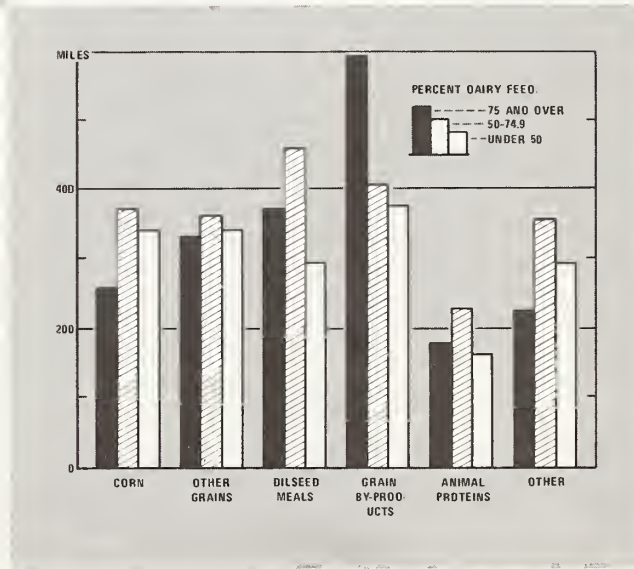


FIGURE 11
PERCENTAGE OF INGREDIENTS USED
IN ALL PRIMARY FORMULA FEED
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY DAIRY
FEEDS, 1969

FIGURE 12
AVERAGE DISTANCE OF PRINCIPAL
SUPPLIERS OF INGREDIENTS FROM
COOPERATIVE MILLS SPECIALIZING IN
PRIMARY DAIRY FEEDS, 1969



The medium livestock feed group wholesaled a larger proportion and custom fed a smaller percentage of its total output. The remaining group reported wholesaling less and custom grinding more than the other two groups specializing in livestock feed.

Outshipments of All Feed

Seventy-one percent of the feed in the high livestock feed group was moved out in bulk, compared with 63 percent for the medium group and 77 percent in the low group.

About 90 percent of all feed in the high livestock feed group and 80 percent in the medium group was transported in trucks.

Distances feeds were transported averaged 37 miles for the high livestock feed group and 44 miles for the medium group.

Ingredients Used in Primary Feeds

High-group cooperative establishments producing 75 percent or more primary feeds used 22 percent corn and 20.1 percent other feed grains in their operations in 1969 (fig. 14 and table 17). The medium group used more corn—31.5 percent—and fewer other grains—14.5 percent. These were almost the same percentages as those used by all other cooperatives that year.

Both high and medium groups used about 21 percent oilseed meals, compared with 15.6 percent of the low group. Both used fewer grain by-products and animal proteins, but considerably more other ingredients, such as dehydrated alfalfa and minerals, than the low group.

Inshipments of Ingredients

The high livestock feed group moved in about 68 percent of its ingredients by truck, compared with 61 percent by the medium group and 53 percent by all other cooperatives. Almost all the remaining amounts were shipped in by rail.

The principal suppliers of corn were located only 81 to 88 miles, on the average, from the two groups of feed mills that specialized in livestock feeds (fig. 15 and table 17). For all other mills, suppliers averaged 453 miles distant. The high livestock feed cooperatives also were located somewhat closer to their main suppliers of other ingredients than were the other cooperatives. The average distance from main suppliers for all ingredients was 170 miles for the high livestock feed group, 172 for the medium group, and 456 miles for the low group (fig. 15 and table 17).

Mill Capacity

High-group cooperatives reported an average milling capacity of 16,520 tons, based on 48 weeks per year (table 7). The medium livestock feed group averaged

16,667 tons, and the remaining cooperatives had slightly higher capacities—averaging 17,223 tons per establishment.

Employees

The high livestock feed cooperatives employed an average of 5.5 production employees and 7.1 mill employees per establishment in 1969. The medium group had an average of 7.0 production and 9.3 mill employees. Employees of the low group numbered about the same as those in the high group.

Operating Efficiency

Percent of Capacity Utilized

Cooperatives specializing in livestock feeds operated at a lower percentage of capacity than all other cooperatives. The averages for the high and medium livestock feed groups were 61.5 percent and 67 percent, respectively, compared with 69 percent for the low group (fig. 6 and table 7).

Output per Employee

Cooperatives specializing in primary livestock feed had lower outputs per employee than those producing other types of feed. The high group produced 1,860 tons per production employee compared with 1,585 for the medium livestock group and 2,110 tons for the low group (figs. 7 and 8 and table 8). Outputs per mill employee were 1,431 tons, 1,197 tons, and 1,578 tons for the three groups.

Ingredient Inventory Shrink

Cooperatives with the highest share of livestock feeds had the highest shrinkage of ingredients. The high group averaged about 2.1 percent shrinkage; the medium group, 1.3 percent; and the low group, 1.0 percent (fig. 9 and table 9).

FEED MANUFACTURING AS MAJOR SOURCE OF GROSS INCOME

Cooperatives were asked to rank the activity (in a list of 15) from which they received their major source of gross income.² Based on unexpanded data from 1,615 establishments producing 1,000 tons or more of formula feeds, a total of 407, or 25 percent, were in this group in 1969.

²Example of principal activities in the list were feed manufacturing, pet food manufacturing, grain storage, oilseed processing, farm supply wholesaling or retailing, and broiler production-processing-marketing.

Production—Total and by Regions

The 407 cooperatives produced 9.3 million tons of formula feed, or about half of the output of all cooperatives in 1969 (fig. 16 and table 18). It constituted 18.5 percent of the total produced by all firms where feed manufacturing was the major income source.

Almost half of the output was in the Northeast and Corn Belt Regions. Cooperatives had the highest share of U.S. output—34 percent in the Northeast—and the lowest proportion—3 percent—in the Southern Plains (fig. 17 and table 19).

Production—By Size of Output

About 59 percent of the 407 establishments produced 1,000 to 9,999 tons of formula feed, and their total output was 11 percent of the total by the 407 in this group (table 19).

A little more than 4 percent had outputs exceeding 100,000 tons and their production made up almost 37 percent of the total.

Cooperatives had 16 to 20 percent of the production by all firms in most of the size categories, but cooperative share varied greatly in the three largest output categories (table 19).

Production—By Method of Disposition

Fifty-three percent of the output of these cooperatives was wholesaled, 28 percent was retailed, 3 percent was fed to own animals and custom fed, and the remaining 13 percent was custom mixed (fig. 18 and table 18).

Cooperatives accounted for 26 percent of the total wholesaled, 26 percent of that custom mixed, and for 18 percent of the total retailed by all firms in this major income category in 1969 (table 18). Cooperatives' output represented only 11 percent of the total feed custom fed and 3 percent of that fed to own animals by all firms.

On a regional basis, cooperatives had the highest share (34 percent) of total formula feed output by all firms in the Northeast (table 19). They had the lowest share (3 percent) in the Southern Plains.

FEED MANUFACTURING AS ONE OF THREE LARGEST SOURCES OF GROSS INCOME

Cooperatives were also asked to rank the three activities from which they derived the largest sources of gross income. A total of 863 cooperative establishments, or 53 percent of the total, ranked feed manufacturing as one of their three major sources.

Production—Total and by Regions

These cooperatives produced 13.1 million tons of formula feed in 1969 (fig. 16 and table 1). This was about 71 percent of the total feed produced—18.5 million tons (preliminary data)—by all cooperatives, and it was 19.6 percent of the total produced by all feed milling establishments which ranked feed manufacturing as one of three major sources of income.

Cooperatives in the Corn Belt accounted for one-fourth of the total cooperative volume, followed by those in the Northeast with about 22 percent (fig. 17 and table 22). Cooperative volume was less than 5 percent in the Southern Plains and Mountain Regions.

Cooperatives in the Northeast had the largest share of feed production—33 percent—by all firms which ranked feed manufacturing as one of three major sources of income. Those in the Lake States had 30 percent and those in the Corn Belt about 24 percent. The Southern Plains represented the lowest share at 6 percent.

Production—By Size of Output

Cooperative establishments producing 1,000-9,999 tons comprised 72 percent of the total in this major-income-source group but they accounted for only 19 percent of the volume (table 22). At the other end of the size group, 2.5 percent of the establishments produced more than 100,000 tons and their output comprised 32 percent of the total cooperative output.

Cooperative share of the total by all firms ranged from 12 to 35 percent in the various size categories.

Production—By Method of Disposition

Cooperatives which ranked feed manufacturing as one of its three largest sources of income produced 44 percent of their formula feed for wholesale distribution, 25 percent for retailing, 4 percent for feeding to their own animals, and about 5 percent for custom feeding (fig. 18 and table 23). The remaining 22 percent was custom ground and mixed for farmers.

As in other comparisons, cooperatives had a higher share of the custom mixed and wholesaled feed and a much lower share of the feed fed to their own animals and custom fed than did other firms.

Cooperatives accounted for 51 percent of the volume produced for wholesaling in the Northeast but for only 12 percent in the Southern Plains. They retailed the largest percentage in the Lake States and the smallest share in the Southern Plains. The proportion fed to own animals was small in all regions. The cooperative share of custom feeding was highest in the Corn Belt at 39 percent, but constituted almost none in the western regions. Cooperatives custom mixed 47 percent of the total of this type of feed in the Northern Plains, but only 4 percent in the Southeast.

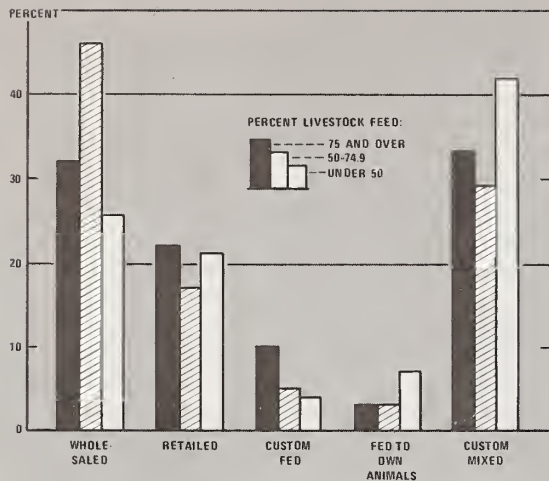


FIGURE 13
DISPOSITION OF ALL FORMULA FEED
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY LIVESTOCK
FEEDS, 1969

FIGURE 14
PERCENTAGE OF INGREDIENTS USED
IN ALL PRIMARY FORMULA FEED
PRODUCED BY COOPERATIVES
SPECIALIZING IN PRIMARY LIVESTOCK
FEEDS, 1969

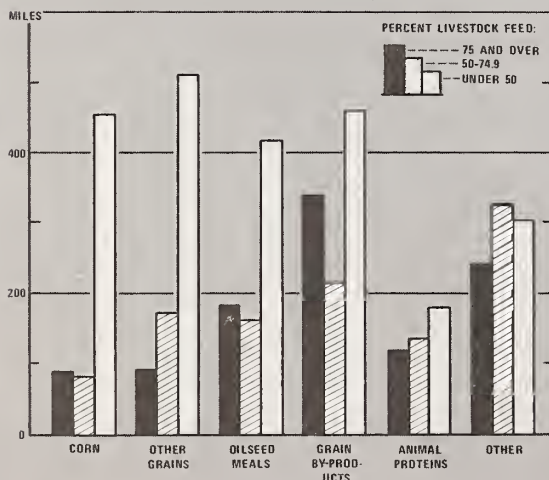
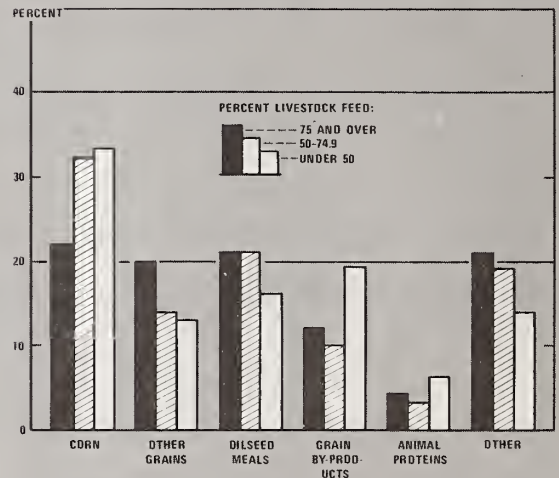


FIGURE 15
AVERAGE DISTANCE OF PRINCIPAL
SUPPLIERS OF INGREDIENTS FROM
COOPERATIVE MILLS SPECIALIZING IN
PRIMARY LIVESTOCK FEEDS, 1969

FIGURE 16
TOTAL FORMULA FEED PRODUCED BY
COOPERATIVES WHOSE MAJOR GROSS
INCOME SOURCE WAS FEED
MANUFACTURING, 1969

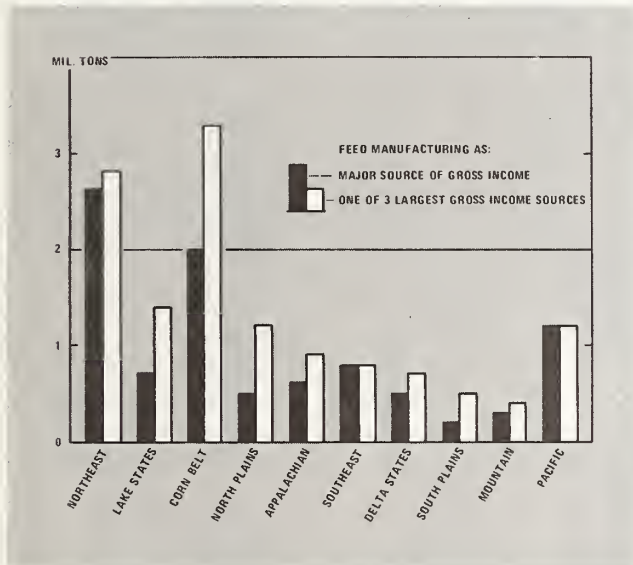
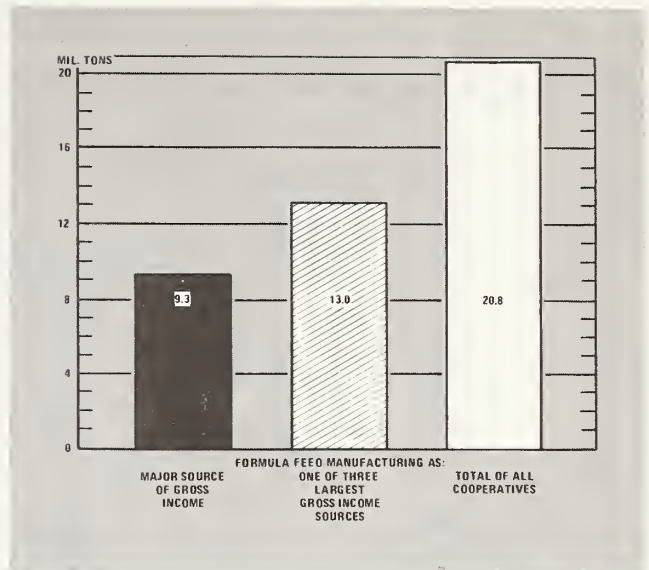
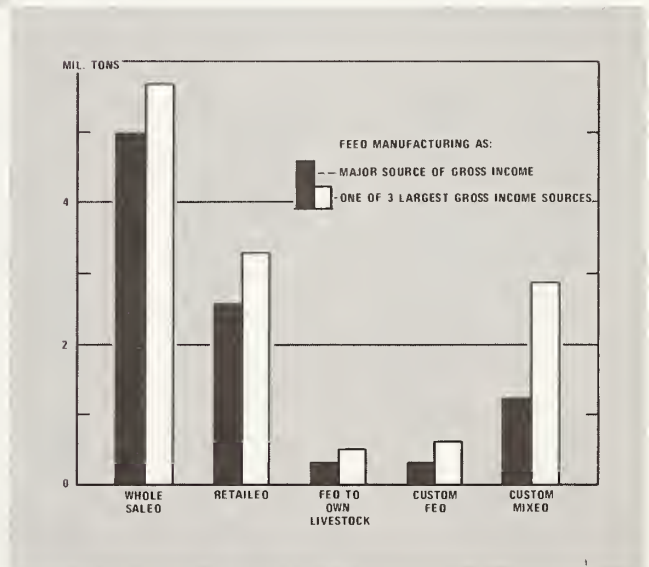


FIGURE 17
PRODUCTION OF FORMULA FEED BY
COOPERATIVES SPECIALIZING IN FEED
MANUFACTURING, BY REGIONS, 1969

FIGURE 18
PRODUCTION OF FORMULA FEED BY
COOPERATIVES SPECIALIZING IN FEED
MANUFACTURING, BY METHOD OF
DISPOSITION, 1969



APPENDIX

All tables in this report pertain to cooperative establishments that produced 1,000 tons or more of formula feeds in 1969.

Table 1—Summary of specialized feed manufacturing operations of cooperatives, 1969

Major type and item	Major type was 75 percent or more of total primary			Major type was 50-74.9 percent of total primary		
	Estab-lish-ments	Quantity produced or used	Percent of total	Estab-lish-ments	Quantity produced or used	Percent of total
	Number	1,000 tons	Percent	Number	1,000 tons	Percent
Poultry feed mills:						
Primary poultry feed	39	1,791.4	82.9	39	1,007.4	59.5
Primary other feed	—	153.0	7.0	—	616.7	36.4
Total primary feed	39	1,944.4	89.9	39	1,624.1	95.9
Secondary feed	—	217.4	10.1	—	70.1	4.1
Total formula feed	39	2,161.8	100.0	39	1,694.2	100.0
Avg. per establishment	—	55.4	—	—	43.4	—
Disposition of formula feed:						
Wholesaled	7	609.1	28.2	19	634.5	37.5
Retailed	24	830.4	38.4	24	514.8	30.4
Custom fed	6	29.9	1.4	11	79.9	4.7
Fed to own birds	9	504.4	23.3	7	318.1	18.8
Custom mixed	15	188.0	8.7	23	146.9	8.6
Total	39	2,161.8	100.0	39	1,694.2	100.0
Ingredients used in primary feeds:						
Feed grains	39	1,147.6	59.7	39	798.3	49.2
Oilseed meals	38	320.3	16.6	38	264.6	16.3
Grain by-products	33	100.1	5.2	33	278.8	17.2
Animal proteins	36	136.2	7.1	38	93.5	5.7
Other ingredients	37	219.1	11.4	39	187.8	11.6
Total	39	1,923.3	100.0	39	1,623.0	100.0
Operating efficiency:		<u>Tons</u>			<u>Tons</u>	
Output per production worker	39	4,669		39	2,635	
Output per mill employee	39	2,437		39	1,914	
		<u>Percent</u>			<u>Percent</u>	
Percent of capacity used	39	103.4		39	91.3	
Percent of shrinkage in ingredients	39	1.45		39	1.56	
Dairy feed mills:						
Primary dairy feed	113	957.3	81.3	83	898.2	59.3
Primary other feed	—	71.1	6.0	—	475.1	31.4
Total primary feed	113	1,028.4	87.3	83	1,373.3	90.7
Secondary feed	—	149.4	12.7	—	140.8	9.3
Total formula feed	113	1,177.8	100.0	83	1,514.1	100.0
Avg. per establishment	—	10.4	—	—	18.2	—
Disposition of formula feed:						
Wholesaled	12	305.5	25.9	16	1,057.3	69.9
Retailed	79	452.1	38.4	54	204.6	13.5
Custom fed	29	68.6	5.8	20	30.6	2.0
Fed to own animals	0	0	0	4	9.4	0.6
Custom mixed	88	351.6	29.9	61	212.2	14.0
Total	113	1,177.8	100.0	83	1,514.1	100.0

(Continued)

Table 1—Summary of specialized feed manufacturing operations of cooperatives, 1969—Continued

Major type and item	Major type was 75 percent or more of total primary			Major type was 50-74.9 percent of total primary		
	Estab- lish- ments	Quantity produced or used	Percent of total	Estab- lish- ments	Quantity produced or used	Percent of total
	<u>Number</u>	<u>1,000 tons</u>	<u>Percent</u>	<u>Number</u>	<u>1,000 tons</u>	<u>Percent</u>
Ingredients used in primary feeds:						
Feed grains	109	415.8	40.4	83	545.7	39.8
Oilseed meals	106	130.9	12.7	83	155.5	11.3
Grain by-products	107	272.5	26.5	80	475.8	34.7
Animal proteins	74	23.2	2.3	71	23.4	1.7
Other ingredients	112	186.2	18.1	82	171.2	12.5
Total	113	1,028.6	100.0	83	1,371.6	100.0
		<u>Tons</u>			<u>Tons</u>	
Operating efficiency:						
Output per production worker	113	2,074		83	1,765	
Output per mill employee	113	1,489		83	1,371	
		<u>Percent</u>			<u>Percent</u>	
Percent of capacity used	113	78.2		83	98.6	
Percent shrinkage in ingredients	113	3.19		83	1.95	
Livestock feed mills:						
Primary livestock feed	350	2,255.2	63.5	272	1,518.7	50.3
Primary other feed	—	293.4	8.2	—	839.6	27.8
Total primary feed	350	2,548.6	71.7	272	2,358.3	78.1
Secondary feed	—	1,005.2	28.3	—	661.2	21.9
Total formula feed	350	3,553.8	100.0	272	3,019.5	100.0
Avg. per establishment	—	10.1	—	—	11.1	—
Disposition of formula feed:						
Wholesaled	87	1,130.9	31.8	99	1,394.4	46.2
Retailed	243	763.6	21.5	190	511.9	17.0
Custom fed	107	360.2	10.1	116	149.3	4.9
Fed to own animals	35	120.3	3.4	74	74.9	2.5
Custom mixed	283	1,178.8	33.2	219	889.0	29.4
Total	350	3,553.8	100.0	272	3,019.5	100.0
Ingredients used in primary feeds:						
Feed grains	322	1,065.2	42.1	266	1,029.8	46.0
Oilseed meals	340	538.4	21.3	268	473.3	21.1
Grain by-products	270	302.7	12.0	242	233.3	10.4
Animal proteins	322	98.4	3.9	261	71.4	3.2
Other ingredients	346	524.4	20.7	270	431.7	19.3
Total	350	2,529.1	100.0	272	2,239.5	100.0
		<u>Tons</u>			<u>Tons</u>	
Operating efficiency:						
Output per production worker	350	1,860		272	1,431	
Output per mill employee	350	1,585		272	1,197	
		<u>Percent</u>			<u>Percent</u>	
Percent of capacity used	350	61.5		272	66.6	
Percent shrinkage in ingredients	350	2.08		272	1.33	

— = not available.

Table 2—Total and primary formula feed production by cooperatives whose major types constituted 75 percent or more and 50-74.9 percent of their total primary output, 1969

Major type of feed establishment	Establishments	Total formula feed produced		Total primary feed produced		Major type of primary feed produced		
		Quantity	Average per establishment	Quantity	Average per establishment	Quantity	Average per establishment	Percent of total primary output in each group
	No.	Tons	Tons	Tons	Tons	Tons	Tons	Percent
Major type: 75 percent or more of total primary feed								
Poultry	39	2,161,793	55,431	1,944,398	49,856	1,791,382	45,933	92.1
Dairy	113	1,177,840	10,423	1,028,443	9,760	957,321	8,472	93.1
Livestock	350	3,553,846	10,154	2,548,609	7,282	2,255,238	6,444	88.5
Total	502	6,893,479	13,732	5,521,450	10,999	5,003,941	9,968	90.6
Major type: 50-74.9 percent of total primary feed								
Poultry	39	1,694,198	43,440	1,624,116	41,644	1,007,408	25,831	62.1
Dairy	83	1,514,060	18,242	1,373,250	16,545	898,221	10,822	65.4
Livestock	272	3,019,494	11,101	2,358,308	8,670	1,518,655	5,583	64.4
Total	394	6,227,752	15,806	5,355,674	13,593	3,424,284	8,691	63.9

Table 3—Production of formula feed by cooperatives specializing in poultry feeds, by region, 1969

Region	Primary poultry feed production was:							
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed		Total production by all cooperatives	
	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Northeast	7	445,777	12	649,700	162	2,136,155	181	3,231,632
Lake States	10	214,417	4	24,918	359	3,537,110	373	3,776,445
Corn Belt	3	43,531	7 }	92,238	653	6,029,684	663	6,146,089
Northern Plains	3	32,468	1 }		305	2,008,689	309	2,060,521
Appalachian	1 }		8 }		83	564,391	92	1,080,483
Southeast	7 }	825,998	1 }	669,705	18	225,926	26	1,205,537
Delta States	3	269,906	0	0	21	435,384	24	705,290
Southern Plains	0	0	0	0	56	657,796	56	657,796
Mountain	1 }		2 }		37	331,858	40	462,144
Pacific	4 }	329,696	4 }	257,637	38	978,285	46	1,435,332
Total	39	2,161,793	39	1,694,198	1,732	16,905,278	1,810	20,761,269
Average		55,431		43,442		9,761		11,470

Table 4—Types of primary formula feed produced by cooperatives specializing in poultry feeds, 1969

Use of feed	Primary poultry feed production was—							
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed		Total production by all cooperatives	
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Starter—grower, layer—breeder	38	957,143	39	492,871	821	1,063,576	898	2,513,590
Broiler	16	723,466	27	437,376	433	215,961	476	1,376,803
Turkey	9	110,773	29	77,161	459	236,674	497	424,608
Subtotal	39	1,791,382	39	1,007,408	1/	1,516,211	1/	4,315,001
Average		45,933		25,831		1/		1/
Dairy	12	73,685	36	388,609	930	3,352,046	978	3,814,340
Beef & sheep	6	13,807	30	44,279	838	1,962,565	874	2,020,651
Swine	13	50,095	34	129,660	938	2,310,347	985	2,490,102
All other	10	15,429	30	54,160	617	573,876	657	643,465
Total	39	1,944,398	39	1,624,116	1,037	9,715,045	1,115	13,283,559
Average—all primary		49,856		41,644		9,368		11,914
Percent								
Poultry feed as a percent of total		92.1		62.1		15.6		32.5

¹Data were not compiled for these groups.

Table 5—Disposition of formula feed produced by cooperatives specializing in poultry feeds, 1969

Disposition of all formula feed	Primary poultry feed production was—							
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed		Total production by all cooperatives	
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Wholesaled	7	609,090	19	634,481	309	5,047,876	335	6,291,447
Retailed	24	830,391	24	514,774	911	2,834,620	959	4,179,785
Custom fed	6	29,864	11	79,934	445	1,012,108	462	1,121,906
Fed to own animals	9	504,411	7	318,089	193	370,461	209	1,192,961
Custom ground & mixed	15	188,037	23	146,920	1,470	7,640,213	1,518	7,975,170
Total	39	2,161,793	39	1,694,198	1,732	16,905,278	1,810	20,761,269

Table 6—Ingredients used in primary feeds by cooperatives specializing in poultry feeds, 1969

Ingredient	Quantity used by cooperatives whose primary poultry feed production was:							
	75 percent or more of total primary				50-74.9 percent of total primary			
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	39	912,568	47.4	582	39	639,199	39.4	553
Sorghum	15	185,791	9.7	1,309	21	56,040	3.5	541
Barley	20	17,202	0.9	217	26	43,248	2.7	
Oats	26	9,163	0.5	552	36	32,956	2.0	
Wheat	16	22,846	1.2	81	29	26,822	1.6	551
Total	39	1,147,570	59.7	683	39	798,265	49.2	
Oilseed meals:								
Soybean meal	38	296,634	15.4	435	38	251,498	15.5	1/
Cottonseed meal	16	22,333	1.1	369	26	9,978	0.6	505
Other oilseed meal	14	1,325	0.1	198	22	3,086	0.2	
Total	38	320,292	16.6	429	38	264,562	16.3	
Grain by-products:								
Brewers' dried grains	12	1,162	0.1	275	22	15,534	1.0	1/
Distillers' dried grains	18	11,517	0.6	555	27	16,872	1.0	1/
Corn gluten feed	15	11,344	0.6	650	26	37,094	2.3	
Corn gluten meal	25	13,518	0.7	727	23	14,597	0.9	
Hominy feed	9	14,590	0.7	1,008	20	47,239	2.9	1/
Wheat mill feeds	24	28,063	1.5	492	32	138,429	8.5	
Other mill feeds	16	19,882	1.0	208	21	9,050	0.6	505
Total	33	100,076	5.2	565	33	278,815	17.2	
Animal proteins:								
Meat meal tankage	14	8,013	0.4	73	20	6,901	0.4	1/
Meat & bone meal	26	63,343	3.3	117	36	41,425	2.5	1/
Fish meal	34	31,289	1.6	363	33	25,870	1.6	
Poultry by-product meal	13	23,040	1.2	51	16	12,642	0.8	218
Feather meal	11	4,621	0.3	117	18	3,371	0.2	
Milk products	23	5,901	0.3	837	30	3,247	0.2	
Total	36	136,207	7.1	191	38	93,456	5.7	
Other ingredients:								
Fats	31	33,755	1.8	402	29	27,935	1.7	1/
Molasses	24	14,677	0.8	269	34	35,372	2.2	2/
Sugar	12	303	2/	804	19	365	2/	
Alfalfa (dehy.)	33	28,545	1.5	575	38	21,363	1.3	0.4
Alfalfa (sun-cured)	14	15,377	0.8	174	21	6,113	0.4	
Vitamins	26	736	2/	321	30	719	2/	2.6
Minerals	33	69,618	3.6	448	35	41,690	2.6	
Trace minerals	23	856	2/	253	29	1,014	0.1	0.3
Premixes	32	4,556	0.2	361	36	5,081	0.3	
Animal drugs	29	1,639	0.1	466	34	2,097	0.1	0.3
Urea	19	1,461	0.1	307	30	4,203	0.3	
Beet pulp	13	1,075	0.1	341	25	6,158	0.4	2.2
Citrus pulp	3	885	2/	179	13	490	2/	
All other	22	45,619	2.4	295	28	35,165	2.2	319
Total	37	219,102	11.4	369	39	187,765	11.6	
All ingredients	39	1,923,247	100.0	564	39	1,622,863	100.0	482

Continued

Table 6—Ingredients used in primary feeds by cooperatives specializing in poultry feeds, 1969—Continued

Ingredient	Quantity used by cooperatives whose primary poultry feed productions was: Under 50 percent of total primary				Quantity used by all cooperatives			
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	984	2,498,498	26.1	207	1,062	4,050,265	30.9	338
Sorghum	641	650,249	6.8		677	892,080	6.8	488
Barley	709	351,029	3.6		755	411,479	3.1	184
Oats	968	402,875	4.2		1,030	444,994	3.4	266
Wheat	729	123,359	1.3		774	173,027	1.3	158
Total	1,000	4,026,010	42.0	199	1,078	5,971,845	45.5	339
Oilseed meals:								
Soybean meal	1,008	1,378,463	14.4	1/	1,074	1,926,595	14.7	314
Cottonseed meal	770	284,408	3.0		812	316,719	2.4	286
Other oilseed meal	748	65,362	0.7		784	69,773	0.5	244
Total	1,015	1,728,233	18.1	263	1,091	2,313,087	17.6	308
Grain by-products:								
Brewer dried grains	668	86,619	0.9	1/	702	103,315	0.8	323
Distillers' dried grains	651	110,954	1.1		696	139,343	1.1	550
Corn gluten feed	653	183,828	1.9		694	232,266	1.8	658
Corn gluten meal	543	12,355	0.1		591	40,470	0.3	766
Hominy feed	489	267,692	2.8		518	329,521	2.5	742
Wheat mill feeds	871	925,431	9.7		927	1,091,923	8.3	266
Other mill feeds	667	130,481	1.4		704	159,413	1.2	206
Total	911	1,717,360	17.9	387	977	2,096,251	16.0	411
Animal proteins:								
Meat meal tankage	721	36,603	0.4	1/	755	51,517	0.4	71
Meat & bone meal	873	219,795	2.3		935	324,563	2.5	92
Fresh meal	762	32,620	0.3		829	89,779	0.7	413
Poultry by-prod. meal	239	4,262	2/		268	39,944	0.3	100
Feather meal	365	6,412	0.1		374	14,404	0.1	117
Milk products	761	63,105	0.7		814	72,253	0.5	289
Total	942	362,797	3.8	140	1,016	592,460	4.5	164
Other ingredients:								
Fats	677	35,398	0.4	1/	737	97,088	0.7	221
Molasses	965	362,771	3.8		1,023	412,820	3.2	287
Sugar	650	14,515	0.1		681	15,181	0.1	827
Alfalfa (dehy.)	915	239,951	2.5		986	289,861	2.2	298
Alfalfa (sun-cured)	652	89,704	0.9		687	111,194	0.9	117
Vitamins	806	10,570	0.1		862	12,025	0.1	190
Minerals	951	421,203	4.4		1,019	532,511	4.1	378
Trace minerals	730	10,192	0.1		782	12,062	0.1	264
Premixes	830	69,007	0.7		898	78,644	0.6	191
Animal drugs	789	14,574	0.2		852	18,310	0.1	369
Urea	825	68,694	0.7		874	74,358	0.6	309
Beet pulp	703	74,264	0.8		741	81,497	0.6	221
Citrus pulp	363	29,078	0.3		379	30,453	0.2	308
All other	711	302,349	3.2		761	383,133	2.9	243
Total	1,029	1,742,270	18.2	277	1,105	2,149,137	16.4	290
All ingredients	1,037	9,576,670	100.0	256	1,115	13,122,780	100.0	329

¹ Data not compiled for separate items.² Less than 0.1 percent.

Table 7—Average capacity and production of formula feed per cooperative mill, based on specialized types of feed produced, 1969

Type of feed and percent of total primary output	Capacity	Production of all feed	
		Quantity	Percent of capacity
	Tons	Tons	Percent
Poultry:			
75 percent or more	53,631	55,431	103.4
50-74.9 percent	45,572	43,440	95.3
Under 50 percent	16,563	9,761	58.9
Dairy:			
75 percent or more	13,333	10,423	78.2
50-74.9 percent	18,507	18,242	98.6
Under 50 percent	17,185	11,195	65.1
Livestock:			
75 percent or more	16,520	10,154	61.5
50-74.9 percent	16,667	11,101	66.6
Under 50 percent	17,223	11,943	69.3
Average of 3 feeds	17,005	11,470	67.5

Table 8—Average output per mill employee and per production worker in manufacturing formula feed, based on specialized types of feed produced, 1969

Type of primary feed and percent of total primary output	Output per—	
	Mill employee	Production worker
	Tons	
Poultry:		
75 percent or more	2,437	4,669
50-74.9 percent	1,914	2,635
Under 50 percent	1,383	1,793
Dairy:		
75 percent or more	1,489	2,074
50-74.9 percent	1,371	1,765
Under 50 percent	1,493	1,983
Livestock:		
75 percent or more	1,431	1,860
50-74.9 percent	1,197	1,585
Under 50 percent	1,578	2,110
Average of 3 feeds	1,483	1,970

Table 9—Percentage shrink in ingredients used in cooperative manufacture of specialized types of formula feeds, 1969

Type of primary feed and percent of total primary output	Shrinkage
	Percent
Poultry:	
75 percent or more	1.45
50-74.9 percent	1.56
Under 50 percent	2.17
Dairy:	
75 percent or more	3.19
50-74.9 percent	1.95
Under 50 percent	1.46
Livestock:	
75 percent or more	2.08
50-74.9 percent	1.33
Under 50 percent	1.04
Average of 3 feeds	1.97

Table 10—Production of formula feed by cooperatives specializing in dairy feeds, by region, 1969

Region	Primary dairy feed production was—						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Northeast	50	474,763	33	661,335	98	2,095,534	181	3,231,632
Lake States	32	196,500	23	136,721	318	3,443,224	373	3,776,445
Corn Belt	4	11,190	7	} 329,203	652	5,813,929	663	6,146,089
Northern Plains	3	6,784	2		304	2,045,504	309	2,060,521
Appalachian	7	16,100	2	} 211,571	83	868,080	92	1,080,483
Southeast	6	90,348	1		19	1,099,921	26	1,205,537
Delta States	2	} 74,077	6	72,062	16	567,787	24	705,290
Southern Plains	0		3	17,605	53	640,191	56	657,796
Mountain	1		3	35,620	36	417,888	40	462,144
Pacific	8	308,078	3	49,943	35	1,077,311	46	1,435,332
Total	113	1,177,840	83	1,514,060	1,614	18,069,369	1,810	20,761,269
Average		10,423		18,242		11,195		11,470

Table 11—Types of primary formula feed produced by cooperatives specializing in dairy feeds, 1969

Use	Primary dairy feed production was:						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Dairy—total	113	957,321	83	898,221	782	1,958,798	978	3,814,340
Average		8,472		10,822		2,505		3,900
Beef & sheep	28	10,240	65	57,361	781	1,953,050	874	2,020,651
Swine	48	15,838	76	159,425	861	2,314,839	985	2,490,102
Starter, grower—layer, breeder	41	33,575	68	157,960	789	2,322,055	898	2,513,590
Broiler	5	195	34	8,566	437	1,368,042	476	1,376,803
Turkey	2	81	30	18,357	465	406,170	497	424,608
All other	19	11,193	48	73,360	590	558,912	657	643,465
Total	113	1,028,443	83	1,373,250	919	10,881,866	1,115	13,283,559
Average—all primary		9,760		16,545		11,841		11,914
			Percent					
Dairy feed as a percent of total		93.1		65.4		18.0		28.7

Table 12—Disposition of formula feed produced by cooperatives specializing in dairy feeds, 1969

Disposition of all formula feed	Primary dairy feed production was:						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Wholesaled	12	305,486	16	1,057,342	307	4,928,619	335	6,291,447
Retailed	79	452,061	54	204,545	826	3,523,179	959	4,179,785
Custom fed	29	68,640	20	30,538	413	1,022,728	462	1,121,906
Fed to own animals	0	0	4	9,411	205	1,183,550	209	1,192,961
Custom ground and mixed	88	351,653	61	212,224	1,369	7,411,293	1,518	7,975,170
Total	113	1,177,840	83	1,514,060	1,614	18,069,369	1,810	20,761,269

Table 13—Ingredients used in primary feeds by cooperatives specializing in dairy feeds, 1969

Ingredient	Quantity used by cooperatives whose primary dairy feed production was—							
	75 percent or more of total primary				50-74.9 percent of total primary			
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	107	229,444	22.3	256	81	360,684	26.3	371
Sorghum	40	43,486	4.2	372	38	59,670	4.4	359
Barley	66	68,846	6.7	315	55	45,358	3.3	
Oats	104	58,115	5.7	374	79	59,171	4.3	
Wheat	67	15,901	1.5	170	56	20,790	1.5	367
Total	109	415,792	40.4	291	83	545,673	39.8	
Oilseed meals:								
Soybean meal	99	88,908	8.6	414	83	114,277	8.3	1/
Cottonseed meal	67	18,643	1.8	349	56	37,534	2.7	457
Other oilseed meal	72	23,360	2.3	216	83	3,659	0.3	
Total	106	130,911	12.7	370	83	155,470	11.3	
Grain by-product:								
Brewers' dried grains	81	17,801	1.7	291	62	20,583	1.5	1/
Distillers' dried grains	76	30,924	3.0	628	57	35,951	2.6	405
Corn gluten feed	67	21,447	2.1	826	55	68,665	5.0	
Corn gluten meal	50	3,807	0.4	736	45	1,317	0.1	226
Hominy feed	60	59,092	5.7	972	43	106,712	7.8	
Wheat mill feeds	92	120,455	11.7	452	74	233,717	17.0	226
Other mill feeds	60	18,988	1.9	258	50	8,839	0.7	
Total	107	272,514	26.5	594	80	475,784	34.7	
Animal proteins:								
Meat meal tannage	58	1,505	0.1	63	51	544	2/	1.1
Meat & bone meal	66	10,070	1.0	95	65	15,177	1.1	
Fish meal	53	4,806	0.5	432	53	1,346	0.1	2/
Poultry by-product meal	40	2,911	0.3	77	24	140	2/	
Feather meal	15	887	0.1	64	7	23	2/	0.5
Milk products	59	3,002	0.3	246	54	6,127	0.5	
Total	74	23,181	2.3	178	71	23,357	1.7	
Other ingredients:								
Fats	55	6,329	0.6	187	50	1,994	0.2	4.4
Molasses	108	48,472	4.7	164	80	59,835	4.4	
Sugar	48	258	2/	842	41	411	2/	1.5
Alfalfa (dehy.)	69	7,054	0.7	372	67	20,906	1.5	
Alfalfa (sun-cured)	49	9,586	0.9	88	41	1,278	0.1	2/
Vitamins	74	1,651	0.2	97	61	399	2/	
Minerals	99	27,622	2.7	316	76	59,243	4.3	2/
Trace minerals	63	603	0.1	264	55	439	2/	
Premixes	71	6,588	0.7	244	65	9,987	0.7	2/
Animal drugs	58	977	0.1	290	63	280	2/	
Urea	83	5,307	0.5	247	60	3,518	0.3	0.4
Beet pulp	79	32,032	3.1	230	61	4,802	0.4	
Citrus pulp	54	12,606	1.2	260	40	1,005	0.1	0.5
All other	68	27,089	2.6	213	53	7,134	0.5	
Total	112	186,174	18.1	223	82	171,231	12.5	352
All ingredients	113	1,028,572	100.0	366	83	1,371,515	100.0	529

Continued

Table 13—Ingredients used in primary feeds by cooperatives specializing in dairy feeds, 1969—Continued

Ingredient	Quantity used by cooperatives whose primary dairy feed production was—				Quantity used by all cooperatives			
	Under 50 percent of total primary							
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	874	3,460,137	32.3	340	1,062	4,050,265	30.9	338
Sorghum	599	788,924	7.3		677	892,080	6.8	488
Barley	634	297,275	2.8		755	411,479	3.1	184
Oats	847	327,708	3.0		1,030	444,994	3.4	266
Wheat	651	136,336	1.3	340	774	173,027	1.3	158
Total	886	5,010,380	46.7		1,078	5,971,845	45.5	339
Oilseed meals:								
Soybean meal	892	1,723,410	16.1	1/	1,074	1,926,595	14.7	314
Cottonseed meal	689	260,542	2.4		812	316,719	2.4	286
Other oilseed meal	657	42,754	0.4		784	69,773	0.5	244
Total	602	2,026,706	18.9	293	1,091	2,313,087	17.6	308
Grain by-products:								
Brewers' dried grains	559	64,931	0.6	1/	702	103,315	0.8	323
Distillers' dried grains	563	72,468	0.7		696	139,343	1.1	550
Corn gluten feed	572	142,154	1.3		694	232,266	1.8	658
Corn gluten meal	496	35,346	0.4		591	40,470	0.3	766
Hominy feed	415	163,717	1.5		518	329,521	2.5	742
Wheat mill feeds	761	737,751	6.9		927	1,091,923	8.3	266
Other mill feeds	594	131,586	1.2		704	159,413	1.2	206
Total	790	1,347,953	12.6	376	977	2,096,251	16.0	411
Animal proteins:								
Meat meal tankage	646	49,468	0.5	1/	755	51,517	0.4	71
Meat & bone meal	804	299,316	2.8		935	324,563	2.5	92
Fish meal	723	83,627	0.8		829	89,779	0.7	413
Poultry by-prod. meal	204	36,893	0.3		268	39,944	0.3	100
Feather meal	352	13,494	0.1		374	14,404	0.1	117
Milk products	701	63,124	0.6		814	72,253	0.5	289
Total	871	545,922	5.1	161	1,016	582,460	4.5	164
Other ingredients:								
Fats	632	88,765	0.8	1/	737	97,088	0.7	221
Molasses	835	304,513	2.8		1,023	412,820	3.2	287
Sugar	592	14,512	0.1		681	15,181	0.1	827
Alfalfa (dehy.)	850	261,901	2.4		986	289,861	2.2	298
Alfalfa (sun-cured)	597	100,330	0.9		687	111,194	0.9	117
Vitamins	727	9,975	0.1		862	12,025	0.1	190
Minerals	844	445,646	4.2		1,019	532,511	4.1	378
Trace minerals	664	11,020	0.1		782	12,062	0.1	264
Premixes	762	62,069	0.6		898	78,644	0.6	191
Animal drugs	731	17,053	0.2		852	18,310	0.1	369
Urea	731	65,533	0.6		874	74,358	0.6	309
Beet pulp	601	44,663	0.4		741	81,497	0.6	221
Citrus pulp	285	16,842	0.2		379	30,453	0.2	308
All other	640	348,910	3.3		761	383,133	2.9	243
Total	911	1,791,732	16.7	291	1,105	2,149,137	16.4	290
All ingredients	919	10,722,693	100.0	318	1,115	13,122,780	100.0	329

¹Data not compiled for separate items.²Less than 0.1 percent.

Table 14—Production of total formula feed by cooperatives specializing in livestock feed, by regions, 1969

Region	Primary livestock feed production was—						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Northeast	4	293,816	0	0	177	2,937,816	181	3,231,632
Lake States	13	85,275	17	148,477	343	3,542,696	373	3,776,448
Corn Belt	144	1,369,876	174	2,019,058	345	2,757,155	663	6,146,089
Northern Plains	141	1,310,927	33	193,014	135	556,580	309	2,060,521
Appalachian	7	18,604	14	114,987	71	946,892	92	1,080,483
Southeast	2	} 75,586	1	} 109,476	23	1,167,681	26	1,205,537
Delta States	4		3		17	558,084	24	705,290
Southern Plains	15	136,824	19	394,414	22	126,558	56	657,796
Mountain	12	163,150	10	} 40,068	18	265,044	40	462,144
Pacific	8	99,788	1		37	1,329,426	46	1,435,332
Total	350	3,553,846	272	3,019,494	1,188	14,187,932	1,810	20,761,272
Average		10,154		11,101		10,568		11,470

Table 15—Types of primary formula feed produced by cooperatives specializing in livestock feeds, 1969

Use	Primary livestock feed production was—						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction	Estab-lishments	Pro-duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Beef and sheep	301	1,083,209	252	606,028	321	331,414	874	2,020,651
Swine	334	978,788	267	788,019	384	723,295	985	2,490,102
All other	164	193,241	205	124,608	288	325,616	657	643,465
Total	350	2,255,238	272	1,518,655	1/	1,380,325	1/	5,154,218
Average		6,444		5,583		1/		1/
Dairy	261	124,251	258	512,627	459	3,177,462	978	3,814,340
Starter, grower-layer, breeder	252	99,122	248	222,564	398	2,191,904	898	2,513,590
Broiler	60	56,427	177	46,047	239	1,274,329	476	1,376,803
Turkey	89	13,571	178	58,415	230	352,622	497	424,608
Total	350	2,548,609	272	2,358,308	493	8,376,642	1,115	13,283,559
Average—all primary		7,282		8,670		16,991		11,914
Percent								
Livestock feed as a percent of total		88.5		64.4		16.5		38.8

¹Data were not compiled for these groups.

Table 16—Disposition of formula feed by cooperatives specializing in livestock feeds, 1969

Disposition of all formula feed	Primary livestock feed production was—						Total production by all cooperatives	
	75 percent or more of total primary feed		50-74.9 percent of total primary feed		Under 50 percent of total primary feed			
	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction	Estab- lishments	Pro- duction
	Number	Tons	Number	Tons	Number	Tons	Number	Tons
Wholesaled	87	1,130,937	99	1,394,377	149	3,766,133	335	6,291,447
Retailed	243	763,616	190	511,853	526	2,904,316	959	4,179,785
Cusom fed	107	360,223	116	149,350	239	612,333	462	1,121,906
Fed to own animals	35	120,296	74	74,929	100	997,736	209	1,192,961
Custom ground and mixed	283	1,178,774	219	888,985	1,016	5,907,411	1,518	7,975,170
Total	350	3,553,846	272	3,019,494	1,188	14,187,929	1,810	20,761,269

Table 17—Ingredients used in primary feeds by cooperatives specializing in livestock feeds, 1969

Ingredient	Quantity used by cooperatives whose primary livestock feed production was—							
	75 percent or more of total primary				50-74.9 percent of total primary			
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	314	557,509	22.0	88	263	704,850	31.5	81
Sorghum	214	266,768	10.6	88	220	157,053	7.0	171
Barley	204	122,269	4.8	65	208	36,891	1.7	
Oats	310	90,643	3.6	144	260	101,608	4.5	
Wheat	209	28,013	1.1	41	215	29,408	1.3	
Total	322	1,065,202	42.1	89	266	1,029,810	46.0	109
Oilseed meals:								
Soybean meal	334	483,485	19.1	161	366	308,317	13.8	1/
Cottonseed meal	236	44,026	1.8	377	234	155,810	6.9	
Other oilseed meal	214	10,898	0.4	300	217	9,176	0.4	
Total	340	538,409	21.3	182	268	473,303	21.1	161
Grain by-products:								
Brewers' dried grains	156	9,838	0.4	153	188	5,085	0.2	1/
Distillers' dried grains	156	18,956	0.8	512	186	6,575	0.3	
Corn gluten feed	161	20,029	0.8	619	193	18,899	0.8	
Corn gluten meal	119	802	2/	715	168	1,142	2/	
Hominy feed	124	46,343	1.8	754	179	10,261	0.5	
Wheat mill feeds	260	185,921	7.4	214	238	149,619	6.7	
Other mill feeds	177	20,857	0.8	128	202	41,760	1.9	
Total	270	302,746	12.0	335	242	233,341	10.4	211
Animal proteins:								
Meat meal tannage	208	13,876	0.5	90	219	10,344	0.5	1/
Meat & bone meal	293	67,558	2.7	79	251	46,931	2.1	
Fresh meat	237	5,634	0.2	442	232	6,636	0.3	
Poultry by-product meal	59	399	2/	80	57	287	2/	
Feather meal	113	1,498	0.1	73	152	951	2/	
Milk products	236	9,392	0.4	243	228	6,255	0.3	
Total	322	98,357	3.9	117	261	71,404	3.2	136
Other ingredients:								
Fats	182	8,042	0.3	112	212	5,410	0.2	1/
Molasses	309	84,992	3.4	286	254	87,879	3.9	
Sugar	195	4,241	0.2	759	200	2,483	0.1	
Alfalfa (dehy.)	309	105,914	4.2	199	260	51,708	2.3	
Alfalfa (sun-cured)	199	48,642	1.9	61	198	10,359	0.5	
Vitamins	246	2,463	0.1	277	232	2,492	0.1	
Minerals	318	139,402	5.5	313	247	79,903	3.6	
Trace minerals	216	3,858	0.1	173	217	2,605	0.1	
Premixes	268	30,055	1.2	159	232	12,600	0.6	
Animal drugs	256	5,387	0.2	407	228	5,586	0.3	
Urea	254	27,222	1.1	312	229	14,045	0.6	
Beet pulp	180	12,071	0.5	122	197	2,491	0.1	
Citrus pulp	50	1,142	2/	497	133	11,829	0.5	
All other	193	50,926	2.0	200	210	142,304	6.4	
Total	346	524,357	20.7	239	270	431,694	19.3	321
All ingredients	350	2,529,071	100.0	170	272	2,239,552	100.0	172

Continued

Table 17—Ingredients used in primary feeds by cooperatives specializing in livestock feeds, 1969—Continued

Ingredient	Quantity used by cooperatives whose primary livestock feed production was—				Quantity used by all cooperatives			
	Under 50 percent of total primary							
	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier	Estab- lish- ments	Total	Percent of co-op total	Average distance from main supplier
	Number	Tons	Percent	Miles	Number	Tons	Percent	Miles
Feed grains:								
Corn	485	2,787,906	33.4	453	1,062	4,050,265	30.9	338
Sorghum	243	468,259	5.6	509	677	892,080	6.8	488
Barley	343	252,319	3.0		755	411,479	3.1	184
Oats	460	252,743	3.0		1,030	444,994	3.4	266
Wheat	350	115,606	1.4		774	173,027	1.3	158
Total	490	3,876,833	46.4	469	1,078	5,971,845	45.5	339
Oilseed meals:								
Soybean meal	474	1,134,793	13.6	1/	1,074	1,926,595	14.7	314
Cottonseed meal	342	116,883	1.4		812	316,719	2.4	286
Other oilseed meal	353	49,699	0.6		784	69,773	0.5	244
Total	483	1,301,375	15.6	414	1,091	2,313,087	17.6	308
Grain by-products:								
Brewers' dried grains	358	88,392	1.1	1/	702	103,315	0.8	323
Distillers' dried grains	354	113,812	1.4		696	139,343	1.1	550
Corn gluten feed	340	193,338	2.3		694	232,266	1.8	658
Corn gluten meal	304	38,526	0.5		591	40,470	0.3	766
Hominy feed	215	272,917	3.3		518	329,521	2.5	742
Wheat meal feeds	429	756,383	9.0		927	1,091,923	8.3	266
Other meal feeds	325	96,796	1.1		704	159,413	1.2	206
Total	465	1,560,164	18.7	456	977	2,096,251	16.0	411
Annual proteins:								
Meat meal tannage	328	27,297	0.3	1/	755	51,517	0.4	71
Meat & bone meal	391	210,074	2.5		935	324,563	2.5	92
Fish meal	360	77,509	0.9		829	89,779	0.7	413
Poultry by-products	152	39,258	0.5		268	39,944	0.3	100
Feather meal	109	11,955	0.1		374	14,404	0.1	117
Milk products	350	56,606	0.7		814	72,253	0.5	289
Total	433	422,699	5.0	180	1,016	592,460	4.5	164
Other ingredients:								
Fats	343	83,636	1.0	1/	737	97,088	0.7	221
Molasses	460	239,949	2.9		1,023	412,820	3.2	287
Sugar	286	8,457	0.1		681	15,181	0.1	827
Alfalfa (dehy.)	417	132,239	1.6		986	289,861	2.2	298
Alfalfa (sun-cured)	290	52,193	0.6		687	111,194	0.9	117
Vitamins	384	7,070	0.1		862	12,025	0.1	190
Minerals	454	313,206	3.7		1,019	532,511	4.1	378
Trace minerals	349	5,599	0.1		782	12,062	0.1	264
Premixes	398	35,989	0.4		898	78,644	0.6	191
Animal drugs	368	7,337	0.1		852	18,310	0.1	369
Urea	391	33,091	0.4		874	74,358	0.6	309
Beet pulp	364	66,935	0.8		741	81,497	0.6	221
Citrus pulp	196	17,482	0.2		379	30,453	0.2	308
All other	358	189,903	2.3		761	383,133	2.9	243
Total	489	1,193,086	14.3	301	1,105	2,149,137	16.4	290
All ingredients	493	8,354,157	100.0	419	1,115	13,122,780	100.0	329

¹Data not compiled for separate items.²Less than 0.1 percent.

Table 18—Disposition of formula feeds produced by cooperative establishments where feed manufacturing was the major gross income source, 1969

Method of disposition	Establishments	Feeds Produced		
		Total	Percent of co-op total	Percent of total by all U.S. firms
	Number	Tons	Percent	
Wholesaled	127	4,958	53.1	25.6
Retailed	263	2,621	28.1	17.8
Fed to own animals	18	301	3.2	3.4
Custom fed	86	288	3.1	11.0
Subtotal	1/	8,168	87.5	18.0
Custom mixed	261	1,165	12.5	25.9
Total ^{2/}	407	9,333	100.0	18.7

¹Data not available as many used 2 or more methods of disposition.

²Total is less than that in table 19 because of variation in reporting disposition data.

Table 19—Formula feed produced by cooperative establishments where feed manufacturing was the major gross income source, by region and size of output, 1969

Region and output	Establishments ¹		Feed produced		
			Quantity	Percent of co-op total	Percent of total by all U.S. firms
	Number	Percent	Tons	Percent	
Region:					
Northeast	71	17.4	2,564,682	27.5	34.0
Lake States	64	15.7	702,574	7.5	23.5
Corn Belt	100	24.7	1,978,157	21.2	20.5
Northern Plains	52	12.8	533,830	5.7	16.8
Appalachian	23	5.6	637,452	6.8	12.6
Southeast	13	3.2	771,141	8.3	12.8
Delta States	18	4.4	547,446	5.9	15.0
Southern Plains	17	4.2	160,574	1.7	3.3
Mountain	16	3.9	289,970	3.1	13.9
Pacific	33	8.1	1,153,944	12.3	21.0
Total	407	100.0	9,339,770	100.0	18.5
Output (tons):					
1,000-9,999	238	58.5	998,249	10.7	16.1
10,000-24,999	74	18.2	1,152,556	12.3	15.9
25,000-49,999	40	9.8	1,313,628	14.1	15.7
50,000-99,999	37	9.1	2,452,782	26.3	19.9
100,000-149,999	8	2.0	1,010,755	10.8	16.4
150,000-199,999	7	1.7	1,137,035	12.2	28.4
200,000-299,999	1	.2	284,000	3.0	8.0
300,000 and up	2	.5	990,765	10.6	37.9
Total	407	100.0	9,339,770	100.0	18.5

¹Total number of mills represented = 427.

Table 20—Disposition of formula feed by cooperative establishments where feed manufacturing was the major gross income source, by region, 1969 (preliminary)

Region	Wholesaled		Retailed		Fed to own animals		Custom fed	
	Tons	Percent of all firms' output in region	Tons	Percent of all firms' output in region	Tons	Percent of all firms' output in region	Tons	Percent of all firms' output in region
	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	<u>Percent</u>
Northeast	1,552	52.2	801	34.3	16	1.3	36	22.8
Lake States	182	14.3	169	40.0	44	13.3	23	22.1
Corn Belt	1,256	25.0	266	10.0	5	1.5	62	26.5
Northern Plains	247	13.8	102	11.6	0	0	46	40.0
Appalachian	433	20.5	77	8.2	18	1.3	71	26.7
Southeast	531	32.7	90	7.4	129	5.2	16	6.3
Delta States	407	33.9	21	4.7	81	4.6	4	3.5
Southern Plains	75	4.2	50	3.2	6	1.0	13	2.1
Mountain	143	30.6	119	14.7	0	0	6	1.3
Pacific	132	11.7	926	27.0	2	0.4	11	3.9
Total	4,958	25.6	2,621	17.8	301	3.4	288	11.0

Region	Subtotal		Custom ground & mixed		Total	
	Tons	Percent of all firms' output in region	Tons	Percent of all firms' output in region	Tons	Percent of all firms' output in region
	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	<u>Percent</u>	<u>1,000</u>	<u>Percent</u>
Northeast	2,405	35.7	160	24.0	2,565	34.7
Lake States	418	19.6	285	34.3	703	23.7
Corn Belt	1,589	19.3	382	28.8	1,971	20.6
Northern Plains	395	14.0	139	40.6	534	16.9
Appalachian	599	12.9	38	10.5	637	12.7
Southeast	766	13.8	5	1.3	771	13.1
Delta States	513	14.6	34	27.6	547	15.0
Southern Plains	144	3.2	17	6.5	161	3.3
Mountain	268	13.9	22	18.6	290	14.1
Pacific	1,071	20.2	83	60.4	1,154	21.2
Total	8,168	18.0	1,165	25.9	9,333	18.7

Table 21—Disposition of formula feeds produced by cooperative establishments where feed manufacturing was 1 of the 3 largest gross income sources, 1969

Method of disposition	Establishments	Feeds produced		
		Total	Percent of co-op total	Percent of total by all U.S. firms
	<u>Number</u>	<u>Tons</u>	<u>Percent</u>	
Wholesaled	164	5,702	44.0	26.4
Retailed	563	3,285	25.3	19.7
Fed to own animals	30	522	4.0	4.0
Custom fed	187	597	4.6	10.5
Subtotal	1 ¹	10,106	77.9	17.8
Custom mixed	651	2,871	22.1	31.7
Total ²	863	12,977	100.0	19.7

¹Data not available as many used 2 or more methods of disposition

²Total is less than that in table 22 because of variation in reporting disposition data.

Table 22—Formula feed produced by cooperative establishments where feed manufacturing was 1 of the 3 largest gross income sources, by region and size of output, 1969

Region and output	Feed produced				
	Establishments (Total number of mills represented = 901.)		Quantity	Percent of co-op total	Percent of total by all firms
	Number	Percent			
Region:			Tons	Percent	
Northeast	121	14.0	2,811,171	21.5	33.1
Lake States	178	20.6	1,421,809	10.9	29.7
Corn Belt	246	28.5	3,261,514	24.9	24.4
Northern Plains	134	15.5	1,191,037	9.1	22.9
Appalachian	49	5.7	899,497	6.9	15.0
Southeast	19	2.2	832,353	6.4	11.9
Delta States	23	2.7	658,713	5.0	13.3
Southern Plains	32	3.7	457,651	3.5	6.3
Mountain	25	2.9	371,787	2.8	10.6
Pacific	36	4.2	1,173,249	9.0	18.9
Total	863	100.0	13,078,781	100.0	19.6
Output (tons):					
1,000-9,999	622	72.1	2,501,695	19.1	22.7
10,000-24,999	125	14.5	1,835,223	14.0	18.9
25,000-49,999	52	6.0	1,709,657	13.1	16.5
50,000-99,999	42	4.9	2,844,996	21.8	19.1
100,000-149,999	10	1.2	1,256,099	9.6	16.1
150,000-199,999	7	.8	1,137,035	8.7	23.5
200,000-299,999	2	.2	503,311	3.8	11.9
300,000 and up	3	.3	1,290,765	9.9	35.2
Total	863	100.0	13,078,781	100.0	19.6

Table 23—Disposition of formula feed by cooperative establishments where feed manufacturing was 1 of the 3 largest gross income sources, by region, 1969 (preliminary)

Region	Wholesale		Retailed		Fed to own animals		Custom fed	
	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region
	1,000 Tons	Percent	1,000 Tons	Percent	1,000 Tons	Percent	1,000 Tons	Percent
Northeast	1,571	51.3	858	34.0	16	1.0	41	21.4
Lake States	186	13.8	266	39.9	45	11.4	77	28.7
Corn Belt	1,664	27.3	472	14.6	11	1.7	162	38.6
Northern Plains	276	15.0	243	21.2	10	3.5	170	18.0
Appalachian	499	22.1	87	8.4	136	7.7	74	25.8
Southeast	565	28.1	93	7.1	129	4.5	30	10.0
Delta States	413	32.1	35	7.0	167	5.8	7	5.6
Southern Plains	243	12.2	118	6.5	6	0.5	13	0.8
Mountain	153	27.4	176	19.2	0	0	8	0.8
Pacific	132	11.5	937	26.1	2	0.3	15	2.8
Total	5,702	26.4	3,285	19.7	522	4.0	597	10.5
	Subtotal		Custom ground & mixed		Total			
	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region	Quantity	Percent of all firms' output in region
	1,000 Tons	Percent	1,000 Tons	Percent	1,000 Tons	Percent		
Northeast	2,487	33.9	320	31.2	2,807	33.6		
Lake States	574	21.5	848	40.8	1,422	30.0		
Corn Belt	2,308	22.3	930	32.4	3,238	24.5		
Northern Plains	699	16.6	424	46.9	1,123	21.9		
Appalachian	796	14.9	103	16.8	899	15.1		
Southeast	817	12.6	15	3.9	832	12.1		
Delta States	622	13.5	37	20.8	659	13.3		
Southern Plains	380	5.6	78	16.7	458	6.4		
Mountain	337	11.0	29	7.8	366	10.6		
Pacific	1,086	18.1	87	55.8	1,173	19.1		
Total	10,106	17.8	2,871	31.7	12,977	19.7		



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